$\frac{17}{120}+\frac{7}{256}=\frac{649}{3840}$, C has $\frac{11}{420}$, D has $\frac{11}{28}-\frac{7}{128}=\frac{303}{896}$, and E has $\frac{157}{1680}$; eight, A has $\frac{51}{1280}-\frac{21}{2048}+\frac{1}{15}=\frac{2957}{30720}$, B has $\frac{649}{3840}-\frac{21}{2048}+\frac{1}{15}=\frac{69225}{307200}$, C has $\frac{11}{420}+\frac{7}{1024}+\frac{1}{15}=\frac{10719}{107520}$, D has $\frac{303}{896}+\frac{7}{1024}+\frac{1}{15}=\frac{442653}{1075200}$, and E has $\frac{157}{1680}+\frac{7}{1024}+\frac{1}{15}=\frac{17951}{107520}$, or reducing these fractions to a common denominator, we have the following: $A\ \frac{20699}{2150400}$, $B\ \frac{48475}{2150400}$, $C\ \frac{21438}{2150400}$, $D\ \frac{88526}{2150400}$, $E\ \frac{35902}{2150400}$, the sum of which is $\frac{215050}{2150400}=1$ as it should be.

Excellent solutions of this problem were received from *G. B. M. Zerr*, *E. W. Morrell*, and *P. S. Berg*

ERRATUM—In the solution of problem 42, Professor Cooper D. Schmitt's address should read, Professor of Mathematics, University of Tenn. etc.

PROBLEMS.

48. Proposed by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy in New Windsor College, New Windsor, Maryland.

Fifty thousand days preceding Thursday, March 7, 1895, was what date and what day of the week?

49. Proposed by J. A. CALDERHEAD, B. Sc., Superintendent of Schools, Limaville, Ohio.

I have a garden in the form of an equilateral triangle, whose sides are 200 feet. At each corner stands a tower; the height of the first is 30 feet, the second is 40 feet, and the third is 50 feet. At what distance from the base of each tower must a ladder be placed, that it may just reach the top of each? And what is the length of the ladder, the garden being a horizontal plane?

[From *Greenleaf's National Arithmetic.*]

Give a solution simple enough to be presented to a class in arithmetic.

ALGEBRA.

Conducted by J. M. COLAW, Monterey, Va. All contributions to this department should be sent to him.

SOLUTIONS OF PROBLEMS.

39. Proposed by ARTEMAS MARTIN, LL. D., U. S. Coast and Geodetic Survey Office, Washington, D. C.

Find x, y, z, and w from the equations

$$x^4+y^4+z^4+x^2+y^2+z^2=112\ldots.(1),$$
$$x^4+z^4+w^4+x^2+z^2+w^2=382\ldots.(2),$$
$$x^4+y^4+w^4+x^2+y^2+w^2=294\ldots.(3),$$
$$y^4+z^4+w^4+y^2+z^2+w^2=364\ldots.(4).$$

I. Solution by A. H. BELL, Hillsboro, Illinois, P. S. BERG, Apple Creek, Ohio, D. G. DURRANCE, Jr., Camden, N.Y., COOPER D. SCHMITT, A.M., University of Tennessee, and H.C. WILKES, Murraysville, West Virginia.